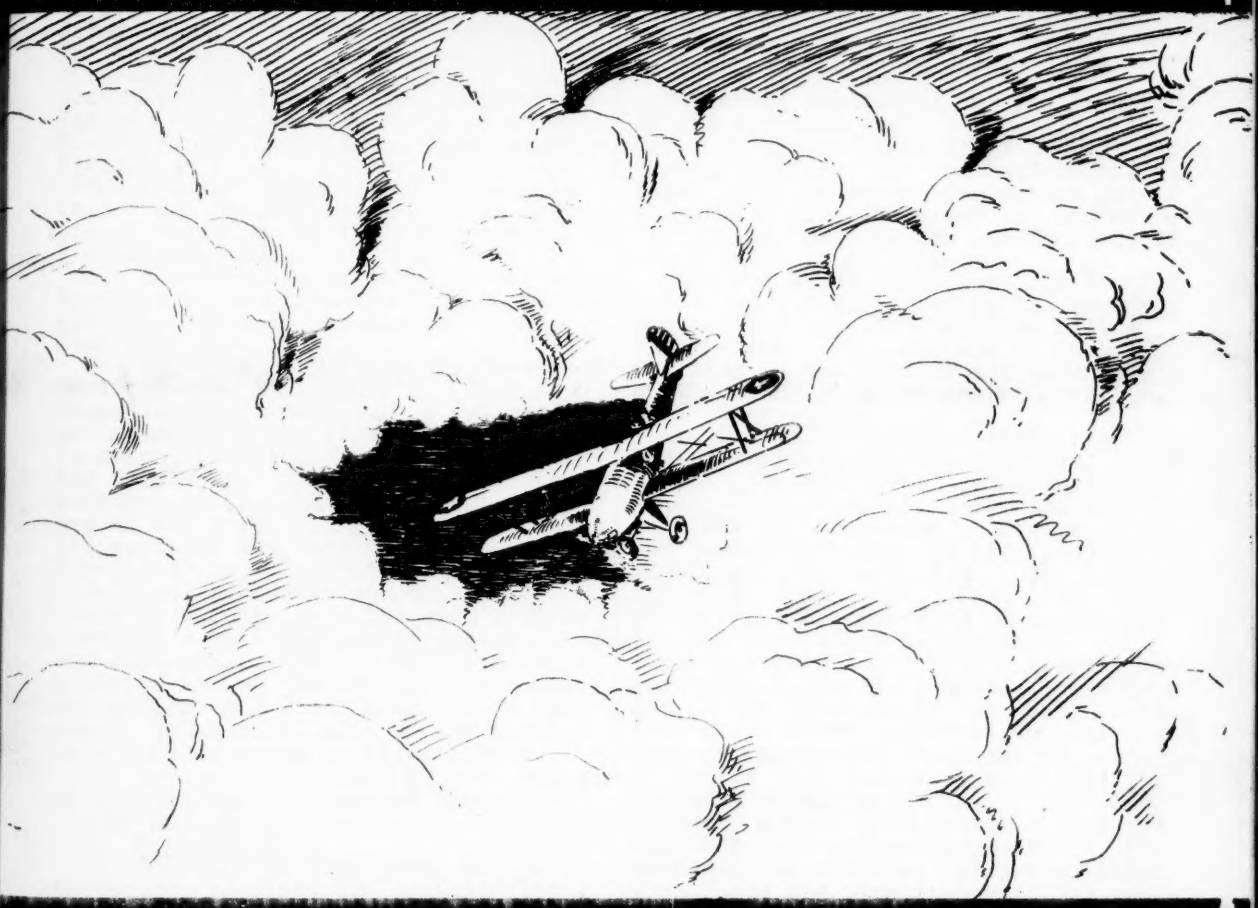
# AIR CORPS NEWS LETTER



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VOL. XVIII APRIL 1, 1935 NO. 6

VOL. XVIII AIR CORPS NEWS LETTER NO. 6.
Information Division, Air Corps — April 1, 1935 — Munition Building, Washington, D.C.

The chief purpose of this publication is to distribute information on aeronautics to the flying personnel in the Regular Army, Reserve Corps, National Guard, and others connected with aviation.

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## FIELD EXERCISES OF SECOND BOMBARDMENT WING, AIR CORPS

The following extracts are taken from the report of Major B.Q. Jones, Air Corps, who commanded the 2nd Bombardment Wing (now part of the Second Wing, GHQ Air Force) on its recent maneuvers in the Fourth Corps Area:

"1. Pursuant to authority of 4th Indorsement, A.G.O., Washington, D.C., dated December 6, 1934, to the Commanding General, Third Corps Area, Baltimore, Maryland, the Second Bombardment Wing, providing its own shelter and messing facilities, engaged in field exercises in the Fourth Corps Area, first concentrating at Miami, Florida, January 11, 1935, and then engaging in combat maneuvers and concentrating in five other areas, returning to its home station February 3, 1935.

a. A detachment of the 19th Airship Squadron accompanied the Wing to Miami, Florida, returning to Langley Field from that place.

2. Strength of Units: The personnel participating in these field exercises, including 4 officers and 14 enlisted men comprising the Airship Squadron detachment, totalled 99 officers, 19 Flying Cadets and 255 enlisted men. The strength of the 2nd Bombardment Group was 45 officers, 11 Flying Cadets and 114 enlisted men, and that of the 8th Pursuit Group, 43 officers, 8 Flying Cadets and 114 enlisted men. This Group personnel, together with 4 officers and 8 enlisted men of Headquarters 2nd Bombardment Wing, 2 officers and 2 enlisted men of the Medical Corps and one officer and 3 enlisted men of the supply detachment, made up the total personnel strength as above stated.

The equipment included 29 Bombardment, 44 Pursuit and 8 Transport planes, 45 trucks and one ambulance.

3. Organization:

a. Shortage of airplanes, including transport, required the organization of the Wing into two groups of two squadrons each with motor vehicles attached for the transportation of personnel and equipment.

b. A detachment of Air Corps Station Supply accompanied the Wing as an Air Corps mobile advanced supply point. The Air Corps Supply Officer also acted as Wing contracting officer.

c. For the combat maneuvers from dispersed airdromes the command was divided into opposing Red and White Forces, each under the command of a group commander and composed of one squadron each of Bombardment and Pursuit operating over two opposing Army fronts.

d. The Flight (of 2 elements of 3 planes each) operated as the basic tactical unit; the squadron as the basic administrative and tactical unit; the group as the basic supply, administrative and tactical unit; the wing as the major tactical command.

The Group commanders and staffs directed the tactical employment and administered to the needs of their composite groups (half Pursuit and half Bombardment) in their respective combat sectors. The Wing Commander and staff functioned as the superior headquarters in the theatre of operations.

(1) The Group Commanders and Staffs evidenced unfamiliarity in the employment of the attached Squadron of the other group. This was due to lack of training in the tactics and technique of the other class of combat aviation.

4. Operations:

a. The Wing, messing, sheltering (in tents), maintaining and supplying itself thruout the exercises, concentrated at Miami, Fla., Jan. 11, 1935, two days late due to bad weather. It dispersed for combat maneuvers to airdromes in the Tampa, Fla. area Jan. 15th, concentrated at Tampa, Fla., Jan. 17th, and performed the prescribed 20 hour maintenance inspection of equipment. It then dispersed for combat maneuvers to airdromes in the Tallahassee, Fla., area Jan. 20th; concentrated at Mobile, Ala., Jan. 23rd, where a planned 40 hour maintenance inspection could not be performed due to cold weather that forced the movement of the Wing Jan. 25th to New Orleans, where, with better hangar facilities (and moderating weather), the necessary maintenance was accomplished. From there the Wing dispersed for combat maneuvers to airdromes in the Montgomery, Ala., area Feb. 1st, from whence, time limitations required the return of the Wing to Langley Field, Feb. 3rd, omitting concentrations and maneuvers in the Atlanta area. Several demonstration side flights were made by units for outlying cities.

(1) Air temperatures from 15° to 75° were encountered. Rain and some snow were experienced only one day.

b. Sixteen independent Air Corps camps



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were made; 3753 hours were flown; 3315 convoy road miles and 2675 air line miles were covered in Wing movements.

c. There was but one forced landing, that of a transport plane with engine trouble on the airdrome at De Funiak Springs, Florida. Several accidents occurred on the ground in landing and taxying. * * *

d. The 19th Airship Squadron, sending forward its own mobile field mooring mast by truck to Miami, flew this TC-13 airship to Miami, remained at that place while the Wing was concentrated there, returning directly to Langley Field upon the departure of the Wing for the Tampa area.

5. Communications:

A ground radio net between the Wing and Group headquarters and between the Wing and the Air Corps net thru Maxwell Field was satisfactorily maintained by using SCR-187 sets installed in airplanes with improvised power furnished while on the ground by the unsatisfactory but only available power unit (Type P E - 41).

6. Equipment:

a. Special equipment lists for the reduced strength units were prepared and used on the exercise.

b. Absence of air transportation required extensive use of motor vehicles and the duplication of certain items of camp and mess equipment.

7. Supply: Replenishments by air transport of non-perishable rations and of the equipment and supplies (including 5 engines) were effected from stations in the rear (principally Maxwell and Langley Field). Bad weather interfered but slightly with this method of supply. Occasional isolated items, not warranting flights to distant supply points, were expressed overland. One lower P-12 wing could not be transported by air and was shipped overland.

(1) Six motors and 2 wings were changed in the field.

(2) Four airplanes were shipped by freight to Air Corps Depots for overhaul.

8. Evacuation:

Evacuation of personnel was effected by air (2 officers and 6 enlisted men were evacuated for all reasons to Army stations including points as far as Langley Field). * * *

9. Comments:

a. The principle of troop movements is the same for air as for ground troops, EXCEPT that air movements are more affected by adverse weather.

b. As was the experience in the Air Mail Operations, airplanes should be provided with, or moved to adequate hangar facilities for their proper maintenance inspections in rainy weather and when air temperatures approach or drop below freezing.

c. With proper transportation, small strength Bombardment and Pursuit squadrons can operate indefinitely in the field from previously prepared airdromes without the assistance of service squadrons.

d. Except for lighter tent poles and pins, the present army camp and field kitchen equipment is most suitable for Air Corps field operations.

(1) Inadequate bedding caused real hardship for the men in cold weather in spite of the fact that Sibley stoves were used.

(2) Special bivouac equipment (especially unheated tents) is undesirable.

(3) The sanitary advantage of paper plates merits their consideration as a standard item.

e. For true self-sufficient Air Corps combat mobility, high speed transport planes are essential for the movement of personnel, equipment and supplies not transportable in combat planes. Transport planes must be unit equipment and actually accompany the flights of their units.

(1) A small transport (the Lockheed C-12), because of its small size and higher cruising speed, was most valuable for evacuation of personnel and the shipment of emergency items.

(2) Baggage space of 16 cu. ft. (4'x2'x2') provided in a few of the monocoque fuselages (P-12E's) was of great value for the transportation of pilots' bedding and clothing rolls, tool kits, spare parts, supplies and field equipment.

f. Self-sufficient mobility of Air Corps Combat Units without transport planes requires duplication in essential items of camp equipment and motor vehicles.

(1) When equipped with motor vehicles, daily movement of Air Corps units is restricted to that of their motor convoys. Changes of base of Air Corps units equipped only with motor vehicle transportation can, in suitable weather, be effected up to the maximum one day's flying range of the airplane by dispatching the convoy echelon ahead in sufficient time.

(2) The $\frac{1}{2}$ ton truck proved unsuitable due to its limited carrying capacity.

(3) Eight passenger reconnaissance trucks and five 6-ton fast moving convertible passenger motor busses would prove the most suitable motor transportation for limited mobility of Air Corps troops.

(a) Two such reconnaissance trucks and four such motor busses would suffice for double echelon movement of single place Pursuit squadrons not equipped with transport planes. Two each would suffice for Bombing squadrons.

g. Maximum combat power with the greatest possible mobility, concealment and security, with ability to concentrate rapidly in critical areas, can only be obtained by the preparation and manning of numerous small dispersed flying fields equipped with concealed cover for the shelter and messing of personnel and housing of air-

planes. This could reduce combat units to combat crews, airplanes and administrative overhead, all ground personnel being provided by service squadrons. This scheme of organization and operation should be reserved for war conditions. For peace time training and field exercises it is more economical and convenient to allow combat units to be self-sufficient, including the necessary ground personnel in their tables of organization.

h. If combat mobility and rapid troop movements are not to be interfered with, combat unit transport planes should not be employed along the line of communications.

(1) The line of communications should provide its own transport planes.

i. An advanced mobile supply point for all classes of supplies should accompany each independent Headquarters in the field.

j. The 22% Pursuit squadron overstrength in spare combat planes was inadequate, while the 33-1/3% Bombardment squadron spare plane overstrength was excessive.

(1) The Bombardment planes were never subject to more than cruising and formation flying speed either in the troop movements or combat maneuvers. On the other hand the Pursuit planes, besides flying the normal cruising and formation speeds, were subjected to the severe stresses of repeated air combats and attacks at all altitudes.

(2) Spare transport planes should have been available from the rear.

k. Properly designed mobile (by air) ground radio sets and power units should be provided all squadron and higher headquarters for use in the ground radio net between dispersed airdromes.

l. Mobile (by air transport) night lighting equipment is essential for night operations.

m. Gasoline and oil should be procured in less quantities than estimated to meet requirements, with options to increase the amounts on call to 50% in excess of the estimated requirements.

(1) Small quantities in ⅛ gal. sealed tins of a special quick starting airplane gascline should be provided for cold weather (freezing) starting of engines.

(a) As much as three hours were required under freezing conditions to get all the motors of the unit started.

(2) The establishment in the several combat areas of distributing points for airplane fuel and oil, the delivery by trucks to the several airdromes in the areas and the servicing of airplanes from 50 gal. gasoline drums and from 1 gal. sealed oil cans proved most satisfactory.

(a) The same method of distribution of all classes of supplies, not excepting ammunition and bombs, could be effectively applied.

n. The development of gun camera films in the field was unsatisfactory, due to conditions of cold and varying mineral salts in the water.

o. The march and camp discipline of the command was superior.

(1) Military camp organization and practices should be adhered to by Air Corps Units.

(2) Special per diem funds should be provided for the quartering and messing of individuals and small detachments isolated from their units by the exigencies of the operations (forced landings, repairing and caring for damaged aircraft left behind, etc.).

p. Obstructions, soft and wet surfaces (only disclosed by personal reconnaissances) prevented the use of many airdromes otherwise suitable for the dispersion of units.

q. The outstanding tactical observation of the exercises was the fear of unit commanders of air attacks against their airdromes and their desire for the dispersion and concealment of their camps and airplanes on auxiliary flying fields.

r. In view of the probable infrequent employment in Army sectors of group masses of Pursuit, Bombardment and Attack aviation and the need for the employment in those sectors of balanced combat teams of Pursuit, Bombardment, and Attack and Observation aviation, careful consideration should be given to the development and training of such teams by the organization at home stations of composite groups composed of balanced forces of the four classes of combat aviation.

(1) Group commanders, as combat leaders, should be trained in the tactical employment of all classes of aviation.

(2) Combat squadrons should be developed and trained as members of balanced combat aviation teams which, in the opinion of the undersigned and except for GHQ Air Force Reserves, should consist of composite groups composed of Pursuit, Bombardment, Attack and Observation units. * * * "

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## GOOD-BYE LIBERTY ENGINES

The Materiel Division Correspondent of the News Letter, touching on the status of Liberty engines, states that instructions have been issued to depots to list on Surplus Property Disposal all V-1650 engines, spare parts, equipment, and accessories, except those obligated for school loans. Service activities, with the exception of Kelly Field, have been instructed to dispose of this property in accordance with Air Corps Circular 65-12. Kelly Field has been authorized to retain three Liberty engines and sufficient spare parts, equipment, and accessories for the maintenance of the C-1C airplane assigned to that station.



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## PURSUIT INTERCEPTION OF BOMBARDMENT AIRPLANES

The Handley Page Bulletin (London, Eng.) for March,1935, prints an interesting article on the ability of fighter "Pursuit" airplanes successfully to combat the operations of multi-engined Bombing airplanes. The article appears in English, French and Spanish, without quoting the author's name.

Two of the most interesting points brought out are: first,that the initiative lies with the Bombing airplane and, second, that unfavorable weather hampers the fighting airplane more in its effort to locate in the air its target,(the Bombing airplane) than such weather hampers the Bombing airplane in locating its target, which is usually fixed on the ground. In especially unfavorable weather, it is probable that fixed targets would always be selected.

Under the initiative which lies with the Bombers, they are able to select a time of arrival at the target most unfavorable to fighter action. In addition, they select the altitude and the route, the former of which may be altered from time to time and the latter of which may be made circuitous, in order still further to baffle efforts at interception. Due to the fact that Bomber action can be carefully predetermined, many aids can be employed in accomplishing its task, such as radio directional devices and special air navigation instruments. Due to the nature of the task confronting the fighter airplane, such aids are not applicable.

In the single-seater fighter operated by one man, it becomes necessary to place the offensive action of the fighter airplane in fixed synchronized guns, which are aimed by the pilot's action in controlling the direction of the airplane. For such a method of fire to be effective, the fighter airplane must have a considerable margin of superiority in speed and maneuverability over the target it is to attack.

Examining the conditions which prevailed in this respect in the World War, it is found, according to the article in the Bulletin, that the fighter had a margin of 50% superiority during most of the period of the World War in which combats between fighter and bombardment airplanes were common. Until recently, designers have been able to maintain the speed of the Pursuit at approximately 50% above that of Heavy Bombardment. In the last year, due to the unusually effective design of multi-engined Bombardment,taken in conjunction with ability to reduce the head resistance of the motors in comparison with their horsepower,the speed of the the Bombardment airplane has rapidly overhauled that of the Pursuit airplane.

Even though it may later be possible again to restore the approximately 50% speed superiority of the Pursuit plane, this speed will then be so great as to give rise to serious doubt of a pilot's ability successfully to perform the maneuvers and firing essential to success in the tactics of the fighter as such tactics were carried out during the World War.

While not referred to in the article, the discussion presented therein suggests that a revolution of fighter design and tactics may be the answer to the successful combating in the air of Bombardment operations. In the matter of design,this may take the form of a multi-engined fighter of somewhat similar characteristics to the Bomber and of only slightly superior speed. This type of fighter would naturally involve a superiority of fire power, perhaps both in the matter of number of guns and also a greater range for the guns. With such conditions obtaining for the fighter airplane, the tactics may then be modified to give the greatest advantage to this superior fire power. It is probable that such tactics may take the form of a "stern chase" and a "running fight" such as are employed in the tactics of naval vessels, but utilizing an added dimension.

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## MEXICAN FLAG PRESENTED TO KELLY FIELD

In appreciation for courtesies shown Mexican Army fliers who graduated from the Air Corps Training Center, General de Division Pablo Quinoza, Secretary of War of the Mexican Republic, presented to the Air Corps Advanced Flying School, Kelly Field, Texas, a beautiful silk Mexican flag and a carved trophy box on which the coat of arms of both nations is hand carved.

The presentation of these gifts was made to Colonel Jacob E. Fickel, Commandant of the Advanced Flying School,by Lieut. Luis Noriega, who graduated from this School last October, and Lieut. Daniel Maldonado, another Mexican flier. These two fliers made a special trip from Mexico City in order to present the gifts.

The flag bears the insignia of the Mexican Air Force,and will be added to the collection which the Advanced Flying School now boasts of and which is displayed at the Aviation Club.

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The crowd of 5,000 present at Kelly Field on the occasion of the recent landing of 40 newPursuit planes of the First Wing, G.H.Q. Air Force, testified to the air-mindedness of San Antonio citizens.



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## TEMPORARY PROMOTIONS IN THE AIR CORPS

Effective March 15, 1935, the assignments of the following-named officers to duty in the Philippine and Panama Canal Departments were confirmed, the Chief of the Air Corps having certified that no officers of suitable permanent rank are available for these duties:

### PHILIPPINE DEPARTMENT

Captain Isaiah Davies, Intelligence and Operations Officer, 4th Composite Group, was promoted to Major, and 1st Lieut. Charles W. O'Connor, Engineering Officer, Philippine Air Depot, to Captain.

Squadron Officers

Captains Martinus Stenseth, Thomas W. Hastey, and Harvey W. Prosser, commanders of the 2nd Obs., 28th Bomb. and 66th Service Squadrons, respectively, were promoted to Major.

Flight Commanders, all 1st Lieutenants, promoted to Captain, were Hugo P. Rush, George W. Mundy, Alfred R. Maxwell, 2nd Observation; William D. Old, Clinton W. Davies, Ford L. Fair, 3rd Pursuit, Charles H. Caldwell, John S. Mills, and David R. Gibbs, 28th Bombardment Squadron.

Intelligence and Operations Officers, 1st Lieut. Leon W. Johnson, 2nd Obs., and 2nd Lieut. Gerald Hoyle, 28th Bombardment Squadron, were promoted to Captain.

First Lieut. Richard D. Reeve, Supply Officer, 66th Service Squadron, promoted Captain.

Second Lieutenants promoted to 1st Lieutenant, were: Winslow C. Morse, Engineering Officer, 3rd Pursuit; Leslie O. Peterson, Armament Officer, 2nd Observation; Harold W. Bowman, Carl A. Brandt, Supply Officers, 3rd Pursuit and 28th Bombardment Squadrons, respectively; Hugh A. Parker and John H. Bundy, Communications Officers, 28th Bombardment and 3rd Pursuit Squadrons, respectively.

### PANAMA CANAL DEPARTMENT

In the 6th Composite Group, Captain Willis R. Taylor, Intelligence and Operations Officer, was promoted to Major; and to the rank of Captain, 1st Lieuts. Ward J. Davies, Supply Officer, and Donald W. Benner, Engineer and Armament Officer.

In the 16th Pursuit Group, promotions were as follows: To Major: Captain Frank O'D. Hunter, Intelligence and Operations Officer - To Captain: 1st Lieuts. Robert S. Israel, Supply Officer, and Charles A. Ross, Engineer and Armament Officer - To 1st Lieut.: 2nd Lieuts. Earl W. Hockenberry, Adjutant, and Edward W. Anderson, Radio Officer.

Squadron Officers

| Name and Rank | Organization | Temp. Rank |
|---|---|---|
| **Squadron Commanders** | | |
| Capt. Homer B. Chandler | 7th Obs.(RS) | Major |
| 1 Lt. Dixon M. Allison | 24th Pursuit | Major |
| Capt. Richard H. Ballard | 25th Bomb. | Major |
| Capt. George H. Beverley | 29th Pursuit | Major |
| Capt. Warner B. Gates | 44th Obs. | Major |
| 1 Lt. Orrin L. Grover | 74th Pursuit | Major |
| 1st Lt. Burton M. Hovey, Jr. | 78th Pursuit | Major |
| Capt. Alonzo M. Drake | 80th Service | Major |
| **Intelligence and Operations Officers** | | |
| 1st Lt. Otto C. George | 7th Obs.(RS) | Capt. |
| 1st Lt. George H. Macnair | 24th Pursuit | Capt. |
| 1st Lt. Bernard A. Bridget | 25th Bomb. | Capt. |
| 1st Lt. Joseph H. Atkinson | 29th Pursuit | Capt. |
| 1st Lt. Guy B. Henderson | 44th Obs.(RS) | Capt. |
| 1st Lt. James W. Brown, Jr. | 74th Pursuit | Capt. |
| 1st Lt. William E. Hall | 78th Pursuit | Capt. |
| **Flight Commanders** | | |
| 1st Lt. John F. Guillet | 7th Obs.(RS) | Capt. |
| 1st Lt. George R. Geer | 7th Obs.(RS) | Capt. |
| 1st Lt. Herbert E. Rice | 24th Pursuit | Capt. |
| 1st Lt. Melie J. Coutlee | 24th Pursuit | Capt. |
| 1st Lt. Neil B. Harding | 25th Bomb. | Capt. |
| 1st Lt. Frank H. Robinson | 25th Bomb. | Capt. |
| 1st Lt. Thayer S. Olds | 29th Pursuit | Capt. |
| 1st Lt. Samuel R. Brentnall | 29th Pursuit | Capt. |
| 1st Lt. Allen W. Reed | 44th Obs.(RS) | Capt. |
| 1st Lt. H.W. Pennington | 44th Obs.(RS) | Capt. |
| 1st Lt. Joel E. Mallory | 74th Pursuit | Capt. |
| 1st Lt. Ronald R. Walker | 74th Pursuit | Capt. |
| 1st Lt. F.A. Armstrong, Jr. | 78th Pursuit | Capt. |
| 1st Lt. David D. Graves | 78th Pursuit | Capt. |
| **Supply Officers** | | |
| 2d Lt. Ralph P. Swofford, Jr. | 24th Pursuit | 1st Lt |
| 2d Lt. Richard J. O'Keefe | 25th Bomb. | 1st Lt. |
| 2d Lt. Frank P. Hunter, Jr. | 44th Obs.(RS) | 1st Lt. |
| 2d Lt. Nelson P. Jackson | 74th Pursuit | 1st Lt. |
| 2d Lt. Hoyt D. Williams | 78th Pursuit | 1st Lt. |
| 1st Lt. Leo W. DeRosier | 80th Service | Capt. |
| **Communications Officers** | | |
| 2d Lt. Dwight Divine, 2d | 24th Pursuit | 1st Lt. |
| 2d Lt. P. Ernest Gable | 25th Bomb. | 1st Lt. |
| 2d Lt. Jacob E. Smart | 44th Obs.(RS) | 1st Lt. |
| 2d Lt. Millard C. Young | 74th Pursuit | 1st Lt. |
| **Engineering Officers** | | |
| 2d Lt. Winton S. Graham | 25th Bomb. | 1st Lt. |
| 2d Lt. Jarred Y. Crabb | 29th Pursuit | 1st Lt. |
| 1st Lt. Joseph A. Bulger | 80th Service | Capt. |
| **Armament Officers** | | |
| 2d Lt. George F. Hartman | 44th Obs.(RS) | 1st Lt. |
| 2d Lt. Lawrence B. Kelley | 25th Bomb. | 1st Lt. |
| **Transport Officers** | | |
| 2d Lt. Thomas B. Hall | 80th Service | 1st Lt. |

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Effective March 16, 1935, the following officers on duty at Air Corps schools, were assigned to duties carrying therewith advanced rank.

At the Air Corps Training Center, Randolph Field, Texas, Captain Arthur E. Easterbrook, Executive Officer, was advanced to Lieut.-Colonel; Captains Charles H. Dowman, Director of Ground Training, and John K. Cannon, Director of Flying Training, to Major.

Officers on duty with the Air Corps Primary Flying School advanced in rank were: To Lieut.-Colonel: Major Lloyd N. Keesling, Assistant Commandant - To Major: Captains Walter Miller, Executive Officer; Edward D. Jones, Engineering Officer; Leonidas L. Koontz, Supply Officer; Auby C. Strickland, Director of Flying Training; Clyde V. Finter, Director of Ground Training; Bob E. Nowland, Primary Stage Commander,



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| **Squadron Commanders** | | |
| Capt. Homer B. Chandler | 7th Obs.(RS) | Major |
| 1 Lt. Dixon M. Allison | 24th Pursuit | Major |
| Capt. Richard H. Ballard | 25th Bomb. | Major |
| Capt. George H. Beverley | 29th Pursuit | Major |
| Capt. Warner B. Gates | 44th Obs. | Major |
| 1 Lt. Orrin L. Grover | 74th Pursuit | Major |
| 1st Lt. Burton M. Hovey, Jr. | 78th Pursuit | Major |
| Capt. Alonzo M. Drake | 80th Service | Major |
| **Intelligence and Operations Officers** | | |
| 1st Lt. Otto C. George | 7th Obs.(RS) | Capt. |
| 1st Lt. George H. Macnair | 24th Pursuit | Capt. |
| 1st Lt. Bernard A. Bridget | 25th Bomb. | Capt. |
| 1st Lt. Joseph H. Atkinson | 29th Pursuit | Capt. |
| 1st Lt. Guy B. Henderson | 44th Obs.(RS) | Capt. |
| 1st Lt. James W. Brown, Jr. | 74th Pursuit | Capt. |
| 1st Lt. William E. Hall | 78th Pursuit | Capt. |
| **Flight Commanders** | | |
| 1st Lt. John F. Guillet | 7th Obs.(RS) | Capt. |
| 1st Lt. George R. Geer | 7th Obs.(RS) | Capt. |
| 1st Lt. Herbert E. Rice | 24th Pursuit | Capt. |
| 1st Lt. Melie J. Coutlee | 24th Pursuit | Capt. |
| 1st Lt. Neil B. Harding | 25th Bomb. | Capt. |
| 1st Lt. Frank H. Robinson | 25th Bomb. | Capt. |
| 1st Lt. Thayer S. Olds | 29th Pursuit | Capt. |
| 1st Lt. Samuel R. Brentnall | 29th Pursuit | Capt. |
| 1st Lt. Allen W. Reed | 44th Obs.(RS) | Capt. |
| 1st Lt. H.W. Pennington | 44th Obs.(RS) | Capt. |
| 1st Lt. Joel E. Mallory | 74th Pursuit | Capt. |
| 1st Lt. Ronald R. Walker | 74th Pursuit | Capt. |
| 1st Lt. F.A. Armstrong, Jr. | 78th Pursuit | Capt. |
| 1st Lt. David D. Graves | 78th Pursuit | Capt. |
| **Supply Officers** | | |
| 2d Lt. Ralph P. Swofford, Jr. | 24th Pursuit | 1st Lt. |
| 2d Lt. Richard J. O'Keefe | 25th Bomb. | 1st Lt. |
| 2d Lt. Frank P. Hunter, Jr. | 44th Obs.(RS) | 1st Lt. |
| 2d Lt. Nelson P. Jackson | 74th Pursuit | 1st Lt. |
| 2d Lt. Hoyt D. Williams | 78th Pursuit | 1st Lt. |
| 1st Lt. Leo W. DeRosier | 80th Service | Capt. |
| **Communications Officers** | | |
| 2d Lt. Dwight Divine, 2d | 24th Pursuit | 1st Lt. |
| 2d Lt. P. Ernest Gable | 25th Bomb. | 1st Lt. |
| 2d Lt. Jacob E. Smart | 44th Obs.(RS) | 1st Lt. |
| 2d Lt. Millard C. Young | 74th Pursuit | 1st Lt. |
| **Engineering Officers** | | |
| 2d Lt. Winton S. Graham | 25th Bomb. | 1st Lt. |
| 2d Lt. Jarred V. Crabb | 29th Pursuit | 1st Lt. |
| 1st Lt. Joseph A. Bulger | 80th Service | Capt. |
| **Armament Officers** | | |
| 2d Lt. George F. Hartman | 44th Obs.(RS) | 1st Lt. |
| 2d Lt. Lawrence B. Kelley | 25th Bomb. | 1st Lt. |
| **Transport Officers** | | |
| 2d Lt. Thomas B. Hall | 80th Service | 1st Lt. |

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Effective March 16, 1935, the following officers on duty at Air Corps schools, were assigned to duties carrying therewith advanced rank.

At the Air Corps Training Center, Randolph Field, Texas, Captain Arthur E. Easterbrook, Executive Officer, was advanced to Lieut.-Colonel; Captains Charles H. Dowman, Director of Ground Training, and John K. Cannon, Director of Flying Training, to Major.

Officers on duty with the Air Corps Primary Flying School advanced in rank were: To Lieut.-Colonel: Major Lloyd N. Keesling, Assistant Commandant - To Major: Captains Walter Miller, Executive Officer; Edward D. Jones, Engineering Officer; Leonidas L. Koontz, Supply Officer; Auby C. Strickland, Director of Flying Training; Clyde V. Finter, Director of Ground Training; Bob E. Nowland, Primary Stage Commander,

and Paul L. Williams, Basic Stage Commander.

Officers on duty with the Air Corps Advanced Flying School, Kelly Field, Texas, advanced in rank were: To Lieut.-Colonel: Major Harrison H.C. Richards, Assistant Commandant; To Major: Captains Lewis A. Dayton, Executive Officer; Clifford C. Nutt, Engineering Officer; Thomas L. Gilbert, Supply Officer; Robert D. Knapp, Director of Flight Training; Perry Wainer, Director of Ground Training - To Captain: 1st Lieuts. Wilfrid H. Hardy, Adjutant; Glen C. Jamison, Operations Officer; Otto P. Weyland, Secretary; Wallace E. Whitson, Chief, Bombardment Section.

Captain Myron R. Wood, Commanding the 67th Service Squadron, Randolph Field, advanced to Major.

Squadron Officers, Kelly Field, Texas:

| Name and Rank | Squadron | Temp. Rank |
|---|---|---|
| **Squadron Commanders** | | |
| Capt. Ulysses G. Jones | 39th Obs. | Major |
| Capt. James A. Healy | 40th Attack | Major |
| Capt. John A. Laird, Jr. | 41st Obs. | Major |
| Capt. Thomas S. Voss | 42nd Bomb. | Major |
| Capt. Louis N. Eller | 43d Pursuit | Major |
| Capt. Roderick N. Ott | 68th Service | Maj. |
| Capt. Louie C. Mallory | 81st Service | Major |
| **Intelligence and Operations Officers** | | |
| 1st Lt. James B. Burwell | 39th Obs. | Capt. |
| 1st Lt. George L. Murray | 41st Obs. | Capt. |
| 1st Lt. Edgar T. Selzer | 42nd Bomb. | Capt. |
| 1st Lt. Samuel E. Anderson | 43rd Pursuit | Capt. |
| **Engineering Officers** | | |
| 2d Lt. Anthony Q. Mustoe | 39th Obs. | 1 Lt. |
| 1st Lt. Adolphus R. McConnell | 68th Serv. | Capt. |
| 1st Lt. Edward H. Underhill | 81st Service | Capt. |
| **Flight Commanders** | | |
| 1st Lt. George A. Whatley | 39th Obs. "A" | Capt. |
| 1st Lt. Clifford P. Bradley | 39th " "B" | Capt. |
| 1st Lt. Augustine F. Shea | 40th Attack | Capt. |
| 1st Lt. James M. Fitzmaurice | 40th Attack | Capt. |
| 1st Lt. Carlisle I. Ferris | 41st Obs. "A" | Capt. |
| 1st Lt. Joseph Smith | 42d Bomb. "A" | Capt. |
| 1st Lt. George H. Steel | 42d Bomb. "B" | Capt. |
| 1st Lt. Clyde K. Rich | 43d Pursuit | Capt. |
| 1st Lt. Howard E. Engler | 43d Pursuit | Capt. |
| **Armament Officers** | | |
| 2d Lt. Roy D. Butler | 42d Bomb. | 1 Lt. |
| 2d Lt. Kenneth A. Rogers | 43d Pursuit | 1 Lt. |
| **Supply Officers** | | |
| 1st Lt. Ralph C. Rhudy | 68th Service | Capt. |
| 1st Lt. Roger J. Browne | 81st Service | Capt. |

## AIR CORPS TECHNICAL SCHOOL, CHANUTE FIELD, ILL.

Captain Earle G. Harper, Assistant Commandant, was advanced to Lieut.-Colonel. Other officers on duty at this School advanced in rank are as follows: To Major - Captains Edwin F. Carey, Executive Officer; Samuel M. Connell, Engineering Officer; William Turnbull Supply Officer; William A. Hayward, Director, Mechanics; Walter T. Meyer, Director, Communications;- To Captain - 1st Lieuts. Robert W. Harper, Adjutant; Herbert W. Anderson, Operations Officer, and William O. Eareckson, Secretary.

Captains Walter K. Burgess, Commander of the 48th Pursuit Squadron, and James B. Carroll, Commander of the 98th Service Squadron, both at Chanute Field, Ill., were advanced to Major.

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## OFFICERS DETAILED TO AIR CORPS TECHNICAL SCHOOL

Special Orders of the War Department recently issued direct various Air Corps officers to pursue courses of instruction at the Air Corps Technical School at Chanute Field, Rantoul, Ill., and to report to the Commandant of that School not later than September 1, 1935, for duty as students.

The officers detailed to pursue the 1935-1936 airplane maintenance engineering-armament course are enumerated below, as follows:

| Name and Rank | Present Station |
|---|---|
| 1st Lt. Herbert L. Grills | Randolph Field, |
| 1st Lt. William T. Hefley | Brooks Field |
| 1st Lt. Carl B. McDaniel | Randolph Field |
| 1st Lt. Eugene H. Rice | Ft. Leavenworth |
| 2nd Lt. Carl R. Feldmann | Randolph Field |
| 2nd Lt. Oliver S. Picher | Langley Field |
| 2nd Lt. Clark N. Piper | Selfridge Field |
| 2nd Lt. George F. Schlatter | Selfridge Field |
| 2nd Lt. Daniel F. Callahan, Jr. | Chanute Field |
| 2nd Lt. Wiley D. Ganey | Chanute Field |
| 2nd Lt. Hilbert F. Muenter | Chanute Field |
| 1st Lt. Joseph F. Carroll, Jr. | Hawaii |
| **1935-1936 Communications Course** | |
| 1st Lt. George F. Kinzie | Chanute Field |
| 2nd Lt. Stuart P. Wright | Chanute Field |
| 1st Lt. William E. Karnes | Fort Sill, Okla. |
| 1st Lt. Frederick A. Pillet | Randolph Field |
| 1st Lt. Edwin L. Tucker | Randolph Field |
| 1st Lt. Louie P. Turner | Langley Field |
| 2nd Lt. Thomas C. Darcy | Langley Field |
| 2nd Lt. Joe W. Kelly | Selfridge Field |
| 2nd Lt. Minthorne W. Reed | Selfridge Field |
| 2nd Lt. Fred S. Srocks | Kelly Field |
| 1st Lt. Richard H. Wise | Hawaii |
| **1935-1936 Photographic Course** | |
| 2nd Lieut. William M. Prince | Hawaii |
| 1st Lt. William O. Eareckson | Chanute Field |
| 2nd Lt. Earle T. MacArthur, Jr. | Chanute Field |

Note: The officers detailed to pursue the Communications Course are directed to report to the Commandant of the Technical School not later than October 1, 1935, while those assigned to the Photographic Course will report on or about September 15, 1935.

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First Lieuts. Narcisse L. Cote and August W. Kissner, Air Corps, on duty in the Philippine Department, were advanced to the temporary rank of Captain. The first-named officer is on duty as Supply Officer of the 4th Composite Group, and the last-named as Engineer Officer of the 66th Service Squadron. These promotions are effective March 22, 1935.

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Air Corps officers receiving permanent promotions, with rank as of March 1, 1935, were Capt. Calvin E. Giffin to Major, 2nd Lts. George E. Price, Richard C. Lindsay to 1st Lt. Second Lts. John G. Fowler and John L. Nelwed promoted to 1st Lieut. with rank as of March 2, 1935.

# THE AIR DANGER

The French publication FIGARO for February 19, 1935, publishes an interview of General Duchene, Inspector General of A.A. Defense. After commenting on aerial danger, General Duchene considers protective measures to be enforced.

"The London air pact can only provide energetic and immediate retaliation for a sudden air attack against civilian populations, whose effect would be greatly reduced by appropriate passive defense measures. France, as well as England, is under the constant menace of an attack by air.

The largest possible number of individuals should be evacuated from the dangerous zone in case of bombardment by air. Only persons necessary for national defense or for the economic life of the nation should be permitted to stay in threatened cities; no exception should be permitted in the limited number of cities to which this measure is applied. Approximately 60% of the population of these towns can be evacuated. This dispersion is a humanitarian measure - keeping a large part of the population outside of the danger zone - and will facilitate the distribution of masks and the use of shelters prepared beforehand for those who have to stay.

The enemy's effort will be brought to bear on towns where a moral result may be anticipated, but more particularly so on strategical points, to curtail the duration of the war by aiming at vital resources: depots, workshops, public administrations, financial establishments, telephone centers, electric plants, railroads, etc. Once the population has been removed, efforts will be devoted to the protection of workmen, administrative personnel, etc.

The objection of the population at parting from those left behind in the menaced zone has been expected, but cannot change the adopted policy. The same thing was done during the last war, when civil populations had to leave their homes in the zone where fighting was going on, their transportation to the rear being provided for. The population will not have to go very far: to small neighboring towns, villages and farms. The population will thus be fairly safe from bombs without being completely uprooted from its immediate interests.

The preparation for dispersion and provision for transportation will be no harder to organize than the mobilization of the army, as this is truly a civilian mobilization which will be made compulsory by law. Accommodations will be provided by requisition. The expense will be the responsibility of the Government, the same as for other war expenses; expense does not count when it is a question of the safety of the population.

Transportation will be provided for, to avoid panic and traffic jams, and the population of Paris will be evacuated within a few days.

This enforced dispersion will be made easier by the bombardment itself: during 1914-1918, when air warfare was far from being as dangerous as it would now be, one million people voluntarily left Paris; a much larger number in face of a graver peril would certainly be willing to leave.

Efficient action on the part of the authorities will be absolutely necessary, otherwise it would degenerate in a mad flight, in riots, etc., if not properly executed. No improvisation is possible in such a matter, and advance measures must be taken."

The newspaper adds that a conspiracy of silence against the air danger would lead the nation to a disaster. Parliament will be responsible if the law on passive defense is delayed further. The preparation for protective measures would mean that 80% of the human lives endangered in certain cities could be saved, but any further delay in this organization would be a crime against the country.

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"LE TEMPS" for the same day prints a long article on "Aerial Defense," referring to the session of the Chamber of Deputies, February 7th, when discussion was begun of "one of the main problems of national defense in case of war which promises to be, above all, an air war."

A report submitted by M. Guerin stresses the danger of aviation in a war to come, as it would attack objectives of all kinds (military, economic and moral) and would use any means: explosive bombs, fire bombs, and gas. Warfare which used to be limited to the zone of the armies will now extend to the entire territory. Civil populations are now familiar with this danger and protection and defensive measures must be adopted.

The High Committee for Passive Defense of the Ministry of the Interior ruled that the expense of passive defense should be borne by those benefitting by it: administrations, public services, departments, towns, private associations or individuals, the Government contributing certain sums only in exceptional cases, in the general interest of the nation or in consideration of the particular situation of those concerned.

"It is not understood why private individuals should not receive from the State the same protection against air danger as they do against land and naval dangers, in exchange for heavy taxation.

But this would swell a budget already too heavy. Municipalities' budgets, on which most of the burden would rest, are already below present requirements, and it would be useless to expect important appropriations on that side.

Other measures, less costly, are easier to enforce, but they must be coherent and efficient."

In a proposed bill for the passive defense of the territory, Article I states the compulsory character of the law, and Article II charges the Ministry of the Interior with the direction, coordination and control of its organization. The article states that "this is making a liaison agent between several departments out of a purely civil ministry. The Presidency of the Council would seem more fitted for the mission, as it is placed above the other ministries, as a sort of liaison agent, and has under it the Secretariat of National Defense. The latter is a permanent organization which could be given facilities to organize this protection, in collaboration with a large number of civil ministries.

Representatives of the services concerned could sit on a permanent Executive Committee (war, air, navy, public works, interior, finance, public health, etc.). Regulations drafted by this committee would be transmitted to a secretary general who would inform civil and military authorities, and departmental and local committees on passive defense, under the supervision of the Inspector General for A.A. Defense.

It would be the duty of that Committee to decide on pertinent measures (which, of course, are mentioned in the proposed bill on passive defense, but which, as many others, may never be enforced), and to control their execution as concerns the installations in cities, industrial establishments, the evacuation of menaced communities, the dispersion of the population, the protection of existing buildings or buildings to be constructed against fire, gas, and explosions caused by air bombs, etc.

It is impossible to rebuild cities like Paris or Lyons, taking into account the danger from the air. Protection measures imposed on new settlements will only cover a fraction of the danger. The immediate effort for passive defense must be brought to bear on cheap but efficient administrative measures, stressing above all decentralization, in an emergency, of towns essential to national defense, like the capital or certain large industrial centers. It is through a minute preparation of dispersion measures in time of peace that civil populations may be protected and also through international air pacts, or the menace of merciless retaliation."

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## SUCCESSFUL FLIGHT OF THE 17TH ATTACK GROUP

The 17th Attack Group, commanded by Captain Ira C. Eaker, Air Corps, recently returned to its home station, March Field, Calif., following an extended flight to Maxwell Field, Ala. Formerly a Pursuit organization, the 17th was redesignated as an Attack outfit when the GHQ Air Force was established.

The 17th is utilizing the Pursuit airplane, type P-26A, but it has been stated that ultimately it will be equipped with the new Northrup Attack plane when a sufficient quantity of them will have been completed by the manufacturer.

Absent from its home station for eight days, the Group made overnight stops at Dallas, Maxwell Field, and Tucson, Ariz. and remained two nights both at Barksdale and Kelly Fields.

The flight proved very instructive in several particulars. The first day's trip was effected in flying time ranging from 6¼ to 6½ hours, or an elapsed time of approximately 8½ hours per squadron. This showed an average speed for the P-26A planes in excess of 220 miles per hour. The servicing of planes required from 45 minutes to an hour per squadron at each stop, which figure should be bettered through more adequate servicing facilities. The airdromes themselves were found to be entirely suitable for the mass movement of fast planes.

Experience in flying in various kinds of weather was also gained. The first day found the Group negotiating a sand storm from Lordsburg, N.M. to Fort Worth, Texas, this storm having grounded many aircraft along the route. A Norther blew in at Dallas and with it a slight snowfall and rain. Cold weather flying was encountered, and heavy rains and low clouds, reducing the visibility practically to zero, were penetrated between Dallas and Montgomery. Bad weather delayed the return at San Antonio and the Group was forced to remain overnight at Tucson.

The results of the flight are considered highly successful. The trip was completed in a minimum of time. No difficulties were experienced by the personnel, and the aircraft functioned excellently. No delay greater than 15 minutes was met for any reason other than weather.

Engineering maintenance, other than the usual checks, was limited to two flat tires and the changing of a few sets of plugs. Radio communication was excellent except radio transmission to Department of Commerce stations. Two squadrons failed to make contact, but the third, through the use of a special improvised loading



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coil in the antenna system was able to work stations up to about 100 miles.

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## LANGLEY FIELD UNDER GHQ AIR FORCE SET UP

Langley Field is functioning under the GHQ set up. Transfers and shifts, organizational and in living quarters, have been accomplished, and the new machine is functioning smoothly and efficiently.

Brigadier-General Henry C. Pratt, in command of the 2nd Wing, has also assumed the duties of Post Commander. His Wing Staff includes Lt.-Col. Willis H. Hale, Executive and Operations Officer; Major Walter Reid, Supply Officer; Captain Malcolm Stewart, Communications Officer; 1st Lieut. D.B. Schanneo, Assistant Operations Officer, and 1st Lt. Hoyt Prindle, Adjutant. His Post Staff includes Colonel Charles H. Danforth, Station Complement Commander; Captain A.M. Guidera, Executive Officer; Capt. Paul Mathis, Adjutant; Captain James T. Hutchison, Engineering Officer; Captain H.A. McGinnis, Supply Officer; 1st Lt. R.E. Nugent, Operations Officer; 1st Lt. U.G. Ent, Meteorological Officer; 1st Lt. Edward A. Hillery, Signal Officer, and Captain H.H. Reily, Air Corps Inspector.

Major C.B. Oldfield, who recently arrived at Langley Field, was assigned as Commanding Officer of the 2nd Bombardment Group.

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## INSTRUMENT FLYING IN HAWAII

Of late, the 50th Observation Squadron has been experimenting with formations in which the leader flies under the hood. The need for leaders who can fly by instruments alone at the head of formations has been demonstrated in the Hawaiian Islands several times, when formations have been caught in bad weather. The uses to which this ability can be put in time of war are evident. Thus far, formations of six ships have been flown with no great difficulty, but only 3-ship formations have been taken into heavy clouds. Six and nine ships will follow shortly.

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## WHEELER FIELD FIGURES PROMINENTLY IN TRANS-PACIFIC FLIGHT PROJECTS

Looking back to the several flight projects in recent months with the Hawaiian Islands as the objective, the News Letter Correspondent from Wheeler Field, T.H., states:

"Situated as we are - well inland, with an airdrome of exceptional dimensions, we seem to have become an important spot in the eyes of Trans-Pacific flight projects. On October 29, 1934, Sir Charles Kingsforth-Smith, pilot, with Captain P.G. Taylor, navigator, arrived in the 'Lady Southern Cross' after an exceptionally well conducted flight from Australia. Following a few days repairing and checking of equipment, the flight was successfully completed to Los Angeles, via Oakland.

Our next excitement was the painstaking search of early December for Captain Charles Ulm, and his crew of co-pilot and navigator, who ran out of fuel and were lost at sea in an endeavor to reach Oahu and Wheeler Field from Oakland, Calif. Everything that was humanly possible to do was done to locate the sinking ship, and only after a period of ten days was the search abandoned.

Our next event was the flight of Miss Amelia Earhart. Shipping her Lockheed Vega from California, via commercial liner, it was set up, auxiliary tanks installed, and a successful full load test accomplished at Wheeler Field. So, without warning, late on the afternoon of Friday, January 11, 1935, Miss Earhart waved good-bye to the ground crew and took off to the east. Next morning we received word of her successful landing at Oakland. A very strenuous flight well executed.

Returning again to the 'Lady Southern Cross' and Captain Taylor, navigator, the pilots of Wheeler Field displayed no little interest in his method of navigation. The Captain gladly obliged, and during his few idle moments gave us some very instructive talks on the long night flight and his managing to keep his ship on the course with weather conditions as a whole not entirely satisfactory."

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## WINTER FLYING CLOTHES USED IN HAWAII

The 18th Pursuit Group at Wheeler Field, T.H., has been conducting an interesting series of tactical problems of late with reference to Pursuit versus Attack missions. The Correspondent states that while the flying equipment is not up-to-date and insufficient in number properly to train the individual pilots, it is felt nevertheless that much was gained in the knowledge of this phase of attack and defense.

Pursuit units equipped with liquid oxygen have stepped up to a high altitude, and winter flying clothing has become a familiar sight in this semi-tropical area.

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The 96th Bombardment Squadron, Langley Field, Va., recently completed a Bombardment Defense problem and test, using .30 caliber guns on towed targets directly above a formation. Approximately 12,000 rounds of ammunition were used.

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# INDUSTRIAL WAR PLANS ACTIVITIES
By the Materiel Division Correspondent

Many Air Corps personnel are unfamiliar with the activities of the Industrial War Plans Section of the Materiel Division, Wright Field, Ohio. This Section is charged with making plans for the assurance of an adequate supply of Air Corps Materiel in time of emergency. This work is carried on under the direct supervision of the Office, Assistant Secretary of War, through the Chief of the Air Corps, and is now in the thirteenth year of its existence. This office has under its jurisdiction six Air Corps Procurement Districts, located at New York City; Buffalo, N.Y.; Cleveland (now at Wright Field), Ohio; Detroit, Mich.; Chicago, Ill., and San Francisco, Calif. The officers in charge of these districts are known as Procurement Planning Representatives.

## Procurement Plans

Plans for the procurement of basic items, such as airplanes, engines, their component parts and accessories, aerial cameras, special trucks and winches, lighter-than-air equipment, etc., have been made for practically all standard types now in existence. These plans contain detailed information regarding the item under discussion, the number required, the sources selected as most suitable to manufacture the article in the quantities required, a statement from each of the selected sources as to the rate of production possible and the percentage of the plant capacity that will be utilized in attaining this production, the estimated unit cost and the cumulative cost for the entire program covering periods of twelve and twenty-four months' requirements, transportation problems involved, and a discussion of any difficulties that might be encountered in the emergency production of the article. These plans are revised every three years, or more often as necessary. When a new type is adopted, it is usually necessary to write an entirely new plan, as the manufacturing phases involved are, in most cases, at variance with those of the former type. The statement from the producer as to his ability to manufacture the item is supported by a factory plan, which is prepared by the Procurement Planning Representative or his civilian assistant, with the aid of the producer, or by the producer himself. One Company has employed an engineer for the sole purpose of preparing factory plans of its plants and subsidiaries.

## Contributory Items

With the plans for the procurement of the basic items progressing satisfactorily, attention is now being given to plans for contributory items and materials which it is assumed might be difficult to procure in the time and quantity required. Many raw materials enter into this class, as well as aircraft hardware, cable and tie rods, valves, springs, crankshafts, machine tools, etc. Plans for permanent mold pistons, tie rods, cordage, engine valves, and valve springs have already been submitted for the approval of the Office, Assistant Secretary of War.

## Procurement Plans in Emergency

An activity of the Industrial War Plans Section, equal in importance to the preparation of procurement plans discussed in the foregoing, is the selection and training of Reserve Officers necessary to the proper functioning of the emergency procurement organization.

Organization charts have been made for the Procurement Section, Wright Field, and each of the six Air Corps Procurement Districts, as well as provision for a liaison office in Birmingham, Ala. A study has been prepared outlining the duties of each of the positions shown on these charts, the rank of the officer to fill the position, and the job specifications which the officer must meet before he can be assigned to the position.

Using these data as a basis, applications for appointment or transfer are carefully scrutinized, and, although the applicant may be of high standing in his profession, the appointment or transfer is not recommended unless he fits a certain definite position in the organization. It might here be mentioned that appointments in the Specialist Section, the source of appointment for officers for procurement duty, have been suspended by the War Department for some time past. It is not known when the suspension will be removed, but it is hoped that it will be soon, as the Air Corps now has less than the 60% allotment of officers authorized for peace time by the War Department.

The emergency procurement organization calls for a total of 452 Reserve Officers, of which 271 (60%) are to be selected and trained during peace time. Until May, 1934, the organization was considerably over strength and it was necessary to eliminate such personnel as were making no attempt to secure training or fit themselves for their emergency assignments. Practically all the Air Corps Reserve Officers who held a pilot's rating were transferred to Corps Area Assignment to bring the number within the allotment for the peace time organization. Such officers as have not qualified for active reappointment, by taking the prescribed active duty training or correspondence courses, are reappointed with restriction upon completion of their five-year terms and are carried in a separate classification, unassigned, in the Office Chief of the Air Corps.



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There are at present 242 Reserve officers assigned to this Section who receive training to fit them for the duties they would be called upon to perform in time of emergency. Those officers not in Government service, as civilian employees, are entitled to two tours of active duty during their five-year period of appointment in the Reserve.

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## AIR SURVEY OF GUATEMALAN - HONDURAN - EL SALVADOR BOUNDARY LINE

Captain Willis R. Taylor, Air Corps, of France Field, Panama Canal Zone, has just completed an aerial survey of the Guatemalan-Honduran-El Salvador boundary line which again demonstrates the value and importance of aerial surveys over terrain which is difficult, if not impossible, to reach by surface transportation. In his work Captain Taylor was assisted by Technical Sergeant George W. Edwards, of the 12th Photo Section, France Field.

The following are interesting extracts of Captain Taylor's report to Colonel William C. McChord, Commanding Officer, 19th Composite Wing:

"The undersigned left France Field, C.Z., January 19, 1935, and was away from France Field twenty-nine and one-half days. Approximately 2550 square miles of territory was photographed at a cost of one dollar and fifty-two cents per square mile. The maps extant of the countries involved were all very poor and in many cases not correct. Three days were spent in checking the existing maps and the territory to be mapped, and a decision was finally made to arbitrarily establish a visual base line between an extinct volcano on one end, known as Chingo, and a fair size lake on the other end known as Guija, this on the Guatemalan-El Salvador boundary. Parallel strips were then flown to this line with the help of the compass and previous experience. Nine 65-mile strips were flown on this area and fortunately when the check was made only a few photographs had to be reflown to cover misses. The "B" and "C" areas cover territory on the Guatemalan-Honduran line and a similar plan was used by establishing a visual base line between two mountain peaks, known as Monte Cristo and Caya Guanca. Approximate variation in elevation on all the areas was about 6000 feet, and in some cases almost 6000 feet variation in single photographs.

At the beginning of the project control markers which show in the photographs were laid out in various points in the mountains. These were made out of muslin cloth. About two days after these were laid out the Indians had stolen all the cloth. On one occasion the marker was put on Chingo Mountain and I photographed it from 13,000 feet. After photographing some other markers I came back at a low altitude over Chingo Mountain and saw the Indians taking up the marker. Some of the engineers told me toward the latter part of the job that they had seen a number of the Indians with new shirts that had the appearance of the material making up the markers. I have had some 12 years experience on photographic mapping and I believe that was the most difficult job I have had to do. This was due to existing maps which were more confusing than helpful. The country itself was also some of the wildest I have ever flown over from the viewpoint of getting anywhere on a forced landing."

Not only was Capt. Taylor extremely busy on his flying and laboratory work, but it was necessary for him to make official calls on dignitaries of five different countries he visited, El Salvador, Guatemala, Honduras, Nicaragua, Costa Rica.

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## PREPARATIONS FOR STRATOSPHERE FLIGHT

The Scott Field Air Depot, under the direction of the Materiel Division, Wright Field, has been busily engaged in the reconditioning of 1900 helium cylinders and valves for use in the proposed stratosphere flight project being sponsored by the U.S. Army Air Corps and the National Geographic Society. This flight is scheduled for early summer. The above cylinders will probably be forwarded to the U.S. Helium Production Plant, Soncy, Texas, for filling in order to obtain dry gas of maximum purity.

## REMOVAL OF AIRSHIP HANGARS

A project of considerable interest to Lighter-than-Air activities is the recent removal of two airship hangars from Ross Field, Arcadia, Calif., and their erection - one at Fort Sill, Okla., and the other at Fort Bragg, N.C. These hangars will be utilized by the First and Second Balloon Squadrons, respectively. This project is being accomplished with P.W.A. funds and will provide suitable Lighter-than-Air storage facilities at the two stations above named when the erection of the hangars is completed.

## INCIDENTS IN THE COLD WEATHER TEST FLIGHT

When the Provisional Winter Test Group was forced to land at Sheboygan County Airport, Mich., on February 2nd, due to heavy fog and storms over the Straits of Mackinac, it proved to be a very fortunate occurrence for one Mr. Cocokis, a fisherman of that section, who had been marooned on Big Beaver Island, which lies approximately 12 miles off shore in Lake Michigan, west of the Straits of Mackinac.

A call was received from the State Department, State of Michigan, requesting that an airplane be dispatched to rescue this man. Lieut. Ott, flying an O-43 airplane, departed from the airport at 2:20 p.m. and, after locating Big Beaver Island and effecting the rescue, returned to the airport at 3:45 p.m.

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The Provisional Winter Test Group had arrived at Duluth, Minn., February 9th. On the following day, at about 12:10 p.m., Captain Calvin E. Giffin, Operations Officer for the flight, received a telephone call at his hotel from the Commanding General, 7th Corps Area, requesting that an airplane be dispatched to Ely, Minn., to convey an oxygen tent and two tanks of oxygen to that point. This oxygen was absolutely necessary in order to save the life of a CCC worker who was dangerously low due to double pneumonia. Captain Giffin and Lieut. Walsh proceeded to the harbor where the airplanes were parked on the ice and ordered that an Observation airplane and a Bomber be warmed up. The Observation crew managed to get their airplane started almost immediately so that it was not necessary to start the Bomber, but it was started and stood by until the O-43 took off. The two oxygen tanks, weighing approximately 125 pounds each, and the oxygen tent which weighed some forty pounds, were delivered to the airplane from the hospital and, after stowing the equipment, Captain Giffin departed at 1:25 p.m. During the trip to Ely, Capt. Giffin was forced to fly at less than 100 feet in order even to see the railroad which he was following due to the exceptionally poor visibility and snow squalls. At one point on the trip out, Captain Giffin passed through a canyon, and on the return trip passed through the same canyon but during a period of somewhat better visibility. He discovered that he had no more than five or six feet to spare on either side.

The oxygen equipment arrived at Ely in time to save the life of this CCC lad, and later in the evening, when the oxygen took effect and it was definitely known that the lad was past the crisis, Lieut.-Colonel Royce received the following telegram from the Commanding General, Seventh Corps Area:

"Re Giffin Mercy Flight to Ely Commanding Officer desires to express sincere appreciation signed Erikson."

No trains were available, nor could any bus or automobile transportation, even if available, have reached the Hospital at Ely, Minnesota, in time to have been of any assistance in this emergency.

A chronology of errands of mercy performed by Army airmen would prove very interesting reading.

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## 55TH PURSUIT COMPLETES GUNNERY PRACTICE

The 55th Pursuit Squadron, Barksdale Field, La., recently returned from Chapman Field, Miami, Fla., and reported the situation well in hand. From available authority it seems that tow target scores averaged about 60 or 70 on each phase. High score during the session was made by 2nd Lieut. J.W. Hinton, Air Reserve, with a mark of 114⅔. High score for record was made by 2nd Lieut. William Eades, Air Reserve, with a mark of 102. The new high speed tow targets were used in the latter part of the firing, but scores were not quite as high on these targets as on the old. However, they are more accommodating to the speed of the P-26A, and that is a help to the towing pilot.

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Plans for the reorganization of Hamilton Field units, which include the formation of a Station Complement and the 69th Service Squadron, are complete.

## SPLENDID SPIRIT AT KELLY FIELD

Kelly Field is a good place to be according to Colonel Jacob E. Fickel, Air Corps, who assumed command of the post on March 1st. To quote from Colonel Fickel: "I find a splendid spirit on the part of both officers and men and that is what counts. Colonel Clagett left things running perfectly, and he is to be congratulated on the condition of Kelly Field in all respects."

The new Commandant has been very busy, what with all the changes in squadron personnel, stormy weather, and becoming acquainted with his subordinates.

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Effective March 1st, the various organizations at Kelly Field were re-designated, as follows:

The Hqrs. A.C.A.F.S. into A.C.A.F.S. Detachment. The five School Squadrons, 39th, 40th, 41st, 42nd and 43rd, became the 39th and 41st Observation, 40th Attack, 42nd Bombardment and 43rd Pursuit.



V-6752, A.C.

MATERIEL DIVISION

# Engineering News

## Overcoming Destructive Torsional Vibration.

Within the last year, the question of destructive torsional vibrations set up by certain propeller-crankshaft combinations in radial, air-cooled engines has gained marked prominence in the activities of the Engineering Section. The diagnosis and solution of this problem is being speeded up considerably by the aid of special instruments developed at the Division for recording torsional vibrations. These torsional vibrations appear to a destructive extent only at certain so-called critical engine speeds and at the present time instructions to the service have specified that operating personnel avoid these critical speeds. It is, of course, realized that this procedure imposes a very definite and undesirable limitation on the usefulness of airplanes in which these engines are installed. Several changes in engines, designed to overcome this condition, are being investigated at the Division. One is a simple vibration dampening mechanism which it appears will reduce the amplitude of the torsional vibration to a value which is within safe limits. The other arrangements under consideration will change the critical speed to one which is outside the usual operating speeds of the engine. It is believed that a satisfactory solution of this problem will soon be completed. Unfortunately, however, until tests can be completed and the proper modifications incorporated in the affected engines, the present operating instructions will have to be observed in the interests of safety.

## 100 Octane Fuel Scores in Race.

The speed obtained in the recent Mitchel Trophy Race in which the winning P-26A airplane averaged 216.8 miles per hour around a 30-mile closed course at low altitude has probably puzzled Air Corps personnel. As this speed is in excess of the original performance test figure of 211 m.p.h. for straightaway high speed at sea level, it might appear that the engines had been abused by improper handling during the race. Such was not the case, however. The high power obtained was made possible by the use of 100 octane fuel, a new gasoline which permits engine operation at much higher output. The improved anti-knock characteristics of the fuel permit increases in power output as high as 30% in some cases, without exceeding the allowable cylinder head temperatures. In addition, this improvement is obtained with a reduction in the lead content and consequent reduction in engine corrosion. The specification for this fuel reduces by half the permissible tetraethyl lead content formerly allowed.

A quantity of this fuel is being obtained for service test in tactical organizations, and it is hoped that regular procurement for service use can be initiated within six months.

## EQUIPMENT ACTIVITIES

## Shutter Control for T-3A (5-lens) Camera

Satisfactory experimental tests have been completed on an electrical shutter control assembly for the Type T-3A Camera. The greatest difficulty that has been experienced in the past with the T-3A camera has been the failure of the shutters when the camera was operated in sub-zero temperatures. During the past year, the manufacturer of the Type T-3A camera has undertaken the development work to overcome this shutter failure, and, after several experimental models, an electrical surge has been perfected, which stores up electrical energy prior to furnishing it to each shutter which has been redesigned to incorporate an electromagnet that operates the shutters simultaneously. Tests have been conducted at the Materiel Division and no shutter failures have occurred on any of three missions that were flown at altitudes above 23,000 feet, where the temperature varied from -30° to -40° C.

As soon as funds become available, this shutter control apparatus will be procured and service tests conducted at various Air Corps activities to determine its suitability for use on the 5-lens (T-3A) camera.

## De-Icers.

Two representatives of the Materiel Division recently visited the B.F.Goodrich Rubber Company, Akron, Ohio, for the purpose of investigating latest developments in de-icer equipment. Tests were witnessed of a section of wing with electrically heated leading edge, mounted in the throat of their wind tunnel in which

moist air is circulated. The wind tunnel is housed in a cold room where a temperature of -10° F. is maintained and an air velocity of 80 m.p.h. A very interesting demonstration was given of the amount of ice that will form on the leading edge of the wing and the amount of electric energy required per sq. ft. of leading edge cover to prevent ice formation.

The results obtained from these tests indicated that the use of heat obtained from the conversion of electrical energy for de-icing purposes is impractical.

Combination Direct Cranking and Inertia Starter.

An experimental combination direct cranking and inertia starter was submitted to the Materiel Division by the Eclipse Aviation Corporation, East Orange, N.J., for test. The starter is designed to combine the advantages of both direct and inertia cranking, by simultaneously energizing the inertia flywheel as it runs free, and cranking the engine slowly (30 r.p.m.). The inertia in the flywheel can then be used to turn the engine over from that point, making a total r.p.m. of approximately 140.

Gasoline Engine Starter.

An experimental starter, manufactured by the Eclipse Aviation Corporation, East Orange, N.J., incorporating the use of a single cylinder gasoline engine to drive the reduction gears, is being tested at the Materiel Division, with a view to cranking the engine at a steady cranking speed of approximately 60 r.p.m.

ARMAMENT ACTIVITIES

Firing Tests with Adapter Assembly.

Development of an adapter assembly, intended for use in mounting the caliber .50 Browning machine gun flexibly, has advanced to the point where actual firing tests have been conducted with an experimental unit. These tests were attended with highly satisfactory results. The adapter is equipped with recoil and counter recoil springs which allow approximately 3/8-inch rearward movement of the gun in the absorption of recoil load. This adapter is intended for use in the floor position of bombardment type airplanes to furnish protection through a rear cone of approximately 45 degrees.

Gun Carriage Development.

Development work is being continued in an effort to obtain a gun carriage which can be used satisfactorily in flexibly mounting two caliber .30 Browning machine guns. Since the establishment of this requirement, which applies to rear cockpits in observation, attack and bombardment airplanes, extreme difficulties have been experienced in obtaining an assembly which could be maneuvered under conditions of high slipstream with a reasonable amount of effort and in obtaining an efficient feeding mechanism or ammunition box arrangement. Experimental tests on a number of types have resulted unsatisfactorily. Efforts in this connection are being continued.

MATERIALS BRANCH ACTIVITIES

Fire Hazard with Ethylized Gasoline.

The fire hazard from sparks and hot scale blown from the exhaust stacks increased with the use of ethylized gasoline. The first development to counteract this effect was a fireproof enamel which could be applied over doped surfaces. This has been quite satisfactory in preventing fires but is not so durable as the dope without enamel.

New Nitrate Dope

A new type of nitrate dope pigmented with cadmium sulphide, which can be applied in the same manner as the standard semi-pigmented dope, has been developed and six observation types were refinished at Fairfield Air Depot. If the service tests are satisfactory, the fireproofing of airplane fabric will be simplified.

Higher Strength Duralumin

The aluminum alloys used in the B-10 and B-12 airplanes, and all airplanes purchased on the 1935 contracts, will be of the type commercially known as 24S, Air Corps Specification #11066. This material has 15% greater strength than the duralumin formerly used and equal corrosion resistance. It is an alloy which can be hardened by heat treatment, but the temperature of the treatment is lower than for duralumin. When this alloy is heated to the temperature now used for duralumin it becomes unfit for service.

New Static Test Building

The new static test laboratory building arrived at a further stage of completion recently when the two big traveling cranes of 5 and 15 tons capacity were put in commission. These cranes have already demonstrated their usefulness by moving an entire static test set-up, steel scaffolding and all, and by picking up the new YOA-5 Douglas amphibian for functional test of the landing gear. Each of the above operations, carried out in a very few minutes, not only saved many man hours of work but made the operations safe and workmanlike.

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## ANNUAL MANEUVERS IN THE PHILIPPINES

The annual maneuvers of the 4th Composite Group, Air Corps, under command of Lieut.-Col. A.L. Sneed, Air Corps, were held at Del Monte, Bukidnon, Mindanao, from January 14th to 26th, inclusive, 32 Air Corps officers, one Medical officer, one Reserve, one Naval officer and 104 enlisted men participating. Two officers, 70 enlisted men and all supplies were transported on the Army Mine Planter COL. GEO. F.E. HARRISON. The remaining personnel made the trip to Del Monte, 500 miles distant, by air. The return trip to Nichols Field was accomplished in the same manner.

The maneuvers served to acquaint all pilots intimately with the Island of Mindanao, its landing fields, and the general conditions to be expected there. A further benefit was to indicate to the civilian populace and the Constabulary the value of the work performed by them on landing fields, and the necessity for the requirements to which they were laid out.

Landings were made by practically all pilots on 19 different fields which may be considered satisfactory for operations of units from a flight in some cases to the entire group in others. Pilots who have previously served in the Philippines will appreciate that considerable field development work has been and is being done on the Island of Mindanao.

The average time per pilot for the maneuver period ran close to 40 hours, no accident or serious maintenance trouble being encountered.

The base at Del Monte was very satisfactory and could be used for any length of time by a group more modernly equipped than the 4th is at present. The landing area is part of the golf course belonging to the Philippine Packing Co., a Del Monte of California subsidiary. It is on a plateau-like shelf, 1800 feet above sea level, about 15 miles directly south of Cagayan, Oriental Misamis. In this locality the pineapples grow so big that the company had to dwarf the stock in order to use the conventional size can. Truck loads of corn (on the cob) and pineapples were delivered to the mess almost daily and always "gratis."

On the staff of the Group Commander were Major Louis M. Field, Flight Surgeon; Captains Isaiah Davies, Operations; Harvey W. Prosser, Engineering; Harold R. Rivers, Supply and Camp Commander, and 2nd Lieut. C.H. Caldwell, Adjutant. Capt. Martinus Stenseth commanded the 2nd Observation and Capt. L.L. Beery, the 28th Bombardment Squadron. Capt. Thomas W. Hastey, Commanding Nichols Field, attended the Maneuvers attached to the 28th Bombardment.

The Department Commander, Major-General Frank Parker, spent three days in camp with the Group, during which time he conducted his annual tactical inspection.

One of the most interesting trips during the Maneuvers was to the Cotogato Province, where General Parker and the entire Group attended a Moro wedding at the home of Datu Paglas Ibrahim near Buluan. Gifts, some of them very old and rare, were presented to each officer present. Also, there were dances by comely maidens to music from Ah Gongs. Even the palm trees seemed to have rhythm.

Upon return to Nichols Field the Bombers, as cargo planes for any and all, were loaded with bolos, spears, shields, bows and arrows, blow guns, betel nut boxes, native hats and curios of Moroland.

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## 74TH PURSUIT WINS CANAL ZONE COMPETITION

Major-General Harold B. Fiske, commanding the Panama Canal Department, announced that the 74th Pursuit Squadron of Albrook Field, Canal Zone, is the 1935 winner of the Department Commander's Trophy, annually awarded the "best Air Corps Squadron" in the Department.

In his letter announcing the award, General Fiske said:

"I congratulate the officers and men of the 74th Pursuit Squadron, particularly as the competition offered by the competing squadrons was very keen. I wish also to commend the officers and men of the 25th Bombardment Squadron upon their excellent showing."

Colonel W.C. McChord, commanding the 19th Composite Wing, was the Judge of all phases of the competition except athletics and administration, both of which were handled by the Department Inspector General, Major R.N. Perley.

The competition, with the maximum possible score for each phase, was as follows:

Inspection and Close Order Drill - 100 points.
Establishment of a bivouac camp, including the cooking of one meal - 100 points.
Technical condition of airplanes and hangars - 100 points.
Administration - 100 points.

Under the heading of athletics, 25 points were awarded each squadron winning a post baseball or basketball championship. The competing squadrons were the 44th Observation, the 24th, 29th, 78th and 74th Pursuit Squadrons, of Albrook Field, and the 7th and 25th Bombardment Squadrons stationed at France Field.

The winning squadron is commanded by Orrin L. Grover, 1st Lieut. at the time of the competition, but now having the temporary rank of Major, Air Corps.

## FUNCTIONS OF NATIONAL GUARD AVIATION

The 41st Division Aviation, Washington National Guard, is aiming to be included as a definite working unit in all problems and tactical maneuvers at the 41st Division National Guard Camp at Camp Murray and Fort Lewis, Wash.

This year is the first time in the history of the Division Aviation that it has had an opportunity to function with a Division camp composed of National Guard troops from Montana, Idaho, Oregon and Washington. Division Aviation regards the coming camp as an excellent opportunity for training of the nature that would become a reality in case of a national emergency.

Not since the formation of the Division Aviation has the organization had the Division Air Officer, to which it is entitled, on the staff of Adjutant General White, of Oregon, also the Division Commander.

In requesting a Division Air Officer at Headquarters, Major Robin A. Day, Instructor and Commanding the 116th Observation Squadron, has the enthusiastic support of the squadron officers, who firmly believe much general good will result to all arms of the service by the presence of an Air Officer on General White's Staff.

It is the desire of the squadron officers that Captain Gardner, Regular Air Corps officer attached as Instructor to the Reserve Aviation at Boeing Field, Seattle, be made Division Air Officer for the camp period.

As the training schedule for the camp appears at this time, the Washington National Guard airmen believe they will be "mere messengers of the air" for catalogued missions long planned not to upset the opposing ground forces. Such a program is regarded as insufficient understanding on the part of plans and training officers as to how aviation can be used to advantage by all arms of the service. This understanding, the airmen contend, will be greatly corrected by the advice of an Air Corps officer on the Division staff and will result in greater effective use of aviation in all future camp maneuvers.

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## HOW FLYING HOURS ARE ACCUMULATED

To answer a query by the Arkansas National Guard Aviation as to how similar organizations roll up hours on tactical missions, the 41st Division Aviation, Washington National Guard, calls attention to various types of tactical missions carried on regularly with ground troops.

Radio, telephone and panel missions are carried on weekly with some of the following organizations: Fourth Infantry Regiment, Fort George Wright; 161st National Guard Infantry, Spokane; 148th Field Artillery, Idaho National Guard, Coeur d'Alene; 248th Field Artillery, Washington National Guard, Olympia; 249th Field Artillery, Oregon National Guard, Salem, Oregon.

A great deal of flying is done on the beam, and many radio missions are completed with the Division Aviation groups station. Panel work is given much consideration. One of the most popular tactical missions is all types of photographic work, especially with the camera gun.

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## SALESMAN IS SOLD ON INSTRUMENT FLYING

Experience makes salesmen, even for instrument flying. In this particular instance the new instrument flying salesman was already a salesman for a certain brand of underwear.

Major Robin A. Day, Commander of the 116th Observation Squadron, Washington National Guard. is an instrument flying enthusiast, "because it is certain to pull you out of a jam sooner or later."

Pilots of the Squadron have believed him, and worked hard under the hood. But Captain William Foster, the underwear salesman, found out that under the hood and "being right in it" is just as different as day and night.

On a weather-threatening flight between Seattle and Tacoma, after having safely crossed the Cascades from Spokane, Capt. Foster encountered a rather innocent-looking storm cloud. He wasn't hunting for trouble, so swung around the cloud, with the exception of one little tip through which he expected to pass in a minute or two. Minutes, however, seemingly turned into hours. All became black inside, and soon the driving sleet formed a deep thickness of ice on the wind shield of the O-38E. With his radio on the Tacoma beam, the Captain went forward, thinking "we'll soon be through this."

His eyes were glued on the bank and turn indicator, altimeter and air speed indicator. There was no time to look across the instrument board at the artificial horizon. The ice formation grew thicker as he next attempted to come out on top. It was then that he requested over the interphone that the radio be switched to the Seattle beam. No sooner had this been accomplished than the SC-134 went out.

Then started the spiral downward from 3700 feet altitude. When the ground came to view the airplane was at an altitude of only about 200 feet.

"The Major is right," came a satisfied voice over the interphone to the observer, "instrument flying will pull you out of a jam sooner or later."

Capt. Foster has added instrument flying to his underwear salesmanship.

# AIR DEFENSE FOR AMERICA

In a speech in the House of Representatives on March 22nd, the Hon. John J. McSwain, Chairman of the House Military Affairs Committee, expressed his belief that most forward-looking, disinterested students of national defense for the United States now regard aircraft as "the first line of defense." He then stated:

"Whether that air power be based directly upon land, or be based upon floating surface craft, such as aircraft carriers, it is nevertheless 'air power' and wherever that 'air power' is exerted it constitutes 'the first line of defense.'

Armies can only defend against invasion by other armies operating on the ground. Naval fleets can only defend us against other naval fleets operating upon the sea. But these two agencies leave us undefended as against attack and invasion by the 'upper flank.' This 'upper flank' consists of 10 miles depth of air and more, and includes a ring around the United States 10,000 miles long. Every mile of altitude and every mile of length constitutes a possible 'port of entry' for invasion by air, and thus there are as many as one hundred thousand points of attack by air, one hundred thousand 'ports of entry' for invasion by air. This means, to the mind which faces the facts as they are, and as they are sure to be tomorrow, that we must increase our capacity to defend America against air attack. We must not only increase aircraft in numbers and in performance, but we must increase personnel to direct such increased number of aircraft. In air fighting the personality of the individual is the greatest single factor. Leadership in ground fighting and in sea fighting is very important. But in air fighting every pilot must largely be his own leader. He must have within himself the will to conquer. He must possess the willingness to dare and to do and to die, out in the lonely air, away from the inspiration of comrades, away from the bugle blast, away from the waving flag, away from the cheers of his companions, away from the newspaper reporters and photographers to record his heroic deeds. In the council chambers of his own soul the air fighter must hold his rendezvous with death and face that issue alone and upon his decision will depend our defense. He, therefore, must be trained and disciplined to meet that test and to resolve that issue in favor of his country and even against his own life.

The size of our earth shrinks as air power increases. The oceans grow narrower as the range of aircraft widens.

Mr. Speaker, the world is now only one-tenth the size it was before the Wright brothers invented the flying machine. Furthermore, development of aircraft in speed, in range, in load-carrying capacity, and in other fighting qualities, will certainly reduce still further the size of the world. Only about 100 years ago that 'wet ditch', the English Channel, about 30 miles wide, was an insuperable barrier to Napoleon's ambitious schemes to defeat and humble England. Today who will dare say, in the face of the fighting and bombing aircraft known even now, that America is secure from invasion and attack by air power, even with 3,000 miles of water on her east and 8,000 miles of water on her west? We need not think that other nations will not use air power in any way that it can be used in order to accomplish their will and to defeat an enemy. We would do it if we got into war, and they will do it.

When war comes all conventions, all treaties, and all so-called 'rules of civilized warfare' will crush and crumble like sand cakes. Undoubtedly, in the next war nations possessing sufficient air power will bomb great centers of population and great centers of industrial activity. Undoubtedly in such cases thousands, and maybe hundreds of thousands, of unarmed and defenseless men and women, being citizens of a nation at war, will be killed or wounded or poisoned from the air. There is no such thing as a 'gentleman's war.' If we do not wish to suffer such horrors, then we must keep out of war. We cannot keep out of war by merely wishing to do so. We can only keep out of war by being prepared to prevent invasion and to punish the invader. We can do this only by having adequate and ample air power consisting of aircraft and trained fighters to employ at once such aircraft.

In America only a war of defense is possible. Whoever will not defend America should not live in America. * * "

Further on in his speech, Mr. McSwain refers to his proposal to Congress and to the country of a consistent and coherent program of expansion and development for the air power of the United States. "That program," he stated, "proposes to enlist the individual initiative, the inventive genius, and the scientific skill of every person in America, however humble and obscure or however powerful and widely known. That program has four stages. These four stages deal, respectively, with personnel in the air forces, the reserves for the replacement of the air forces, the organization of the junior air reserve, and a new program of development and improvement under the general head of procurement."

Touching on the personnel factor, Mr. McSwain referred to the Bill, H.R. 4351, to set up for the Air Corps a separate promotion list. This Bill was quoted in the February 1st issue of the News Letter.

Mr. McSwain made the contention that just as there is a separate promotion

list for the Marine Corps in the Navy, so there ought to be a separate promotion list for the Air Corps, even so long as it remains attached to and a part of the Army. There is a different principle involved in the personnel of the flying forces from that in the ground forces. Discipline for an air officer is a different thing from discipline for a ground officer. Esprit de corps, morale, loyalty to the high command, and all of those factors going to make up a strong and coherent military organization have different forms and are to be interpreted in different terms when applied to the men who fight in the air. That is why there should be a separate promotion list.

"The provision for temporary promotions in the Air Corps," Mr. McSwain said, "is not entirely satisfactory. It ought not to be indefinitely continued. As long as the officer personnel of the Air Corps remains on the promotion list of the Army generally, there is no escape from the occasional use of temporary rank. But with a separate and independent promotion list such temporary rank could be immediately discontinued."

Pointing out that every encouragement must be given to the Organized Reserves and toward every factor going into their development and improvement, Mr. McSwain stated that in time of anything like a major war, Reserve officers will outnumber the Regular Army officers 10 to 1. He referred to several bills introduced by himself and one by Mr. Thomason, of Texas, having for their object the development of the Air Reserve. The gist of these bills was given in the February 15th issue of the News Letter.

Mr. McSwain also referred to the Bill H.R. 6621, to authorize the selection, construction, installation and modification of permanent stations and depots for the Army Air Corps, and frontier air-defense bases generally, stating that he is sponsoring this bill most enthusiastically. On March 22nd, the House Military sub-committee approved this bill without a dissenting vote.

It is quoted below, as follows:

"Be it enacted, &c., That the Secretary of War is hereby authorized and directed to determine in all strategic areas of the United States, including those of Alaska and our overseas possessions and holdings, the location of such additional permanent Air Corps stations and depots as he deems essential, in connection with the existing Air Corps stations and depots and the enlargement of the same when necessary, for the effective peace-time training of the General Headquarters Air Force and the Air Corps components of our overseas garrisons. In determining the locations of new stations and depots, consideration shall be given to the following regions for the respective purposes indicated: (1) The Atlantic Northeast - to provide for training in cold weather and in fog; (2) the Atlantic Southeast and Caribbean areas - to permit training in long-range operations, especially those incident to reinforcing the Panama Canal; (3) the Southeastern States - to provide a depot essential to the maintenance of the General Headquarters Air Force; (4) the Pacific Northwest to establish and maintain air communication with Alaska; (5) Alaska - for training under conditions of extreme cold; (6) the Rocky Mountain area - to provide a depot essential to the maintenance of the General Headquarters Air Force, and to afford, in addition, opportunity for training in operations from fields in high altitudes; and (7) such intermediate stations as will, in connection with (6) provide for transcontinental movements incident to the concentration of the General Headquarters Air Force for maneuvers.

In the selection of sites for new permanent Air Corps stations and depots and in the determination of the existing stations and depots to be enlarged and /or altered, the Secretary of War shall give consideration to the following requirements:

First. The stations shall be suitably located to form the nucleus of the set-up for concentrations of General Headquarters Air Force units in war and to permit, in peace, training and effective planning by responsible personnel in each strategic area, for the utilization and expansion, in war, of commercial, municipal, and private flying installations.

Second. In each strategic area deemed necessary, there shall be provided adequate storage facilities for munitions and other essentials to facilitate effective movements, concentrations, maintenance, and operations of the General Headquarters Air Force in peace and in war.

Third. The stations and depots shall be located with a view to affording the maximum warning against surprise attack by enemy aircraft upon our own aviation and its essential installations, consistent with maintaining, in connection with existing or contemplated additional landing fields, the full power of the General Headquarters Air Force for such close and distant operations over land and sea as may be required in the defense of the continental United States and in the defense and the reinforcement of our overseas possessions and holdings.

Fourth. The number of stations and depots shall be limited to those essential to the foregoing purposes."

Sections 2 and 3 of this bill authorize the Secretary of War to secure such land as may be necessary for the purpose contemplated and to set the machinery in motion for the necessary construction work at these air bases.

Section 4 authorizes the appropriation of funds to carry out this Act.

In recommending that procurement policies should be planned to encourage the development of integrated manufacturing units carrying on their own research, development, design, and production work, the Commission, taking into account the flexible nature of aircraft production work, does not favor the policy of maintaining on the one hand a number of experimental shops which will create new designs, develop new types of aircraft, and after the first machine has been built and flown take no further interest in their own handiwork, and on the other hand a group of mass production plants that will take over the designs from the experimental units and build them in quantity. Protracted service trials of new types of aircraft develop many shortcomings, and if these manifest themselves at a sufficiently early stage immediate changes in the design can be made. The manufacturer follows his product into service, and if the initial responsibility for the design be taken from him, his interest is diminished as is his desire to produce an improved article in succeeding designs.

The Commission recommends that it should be basic policy to concentrate responsibility by insisting that the whole development remain under the control of a single organization. There may of course be exceptions to this rule where an individual engineer or a small organization possessed of no adequate production facilities produces a design of extraordinary merit and submits it for consideration by the War and Navy Departments. Experience suggests, however, that such cases will be exceedingly rare, and can be met by individually exceptional treatment when they develop. An aircraft design is not an invention. It has passed beyond the point where it can be inspired as a whole by a single individual. Good airplanes are not the product of miraculous inspiration but usually of the coordinated effort of a design and research organization of a dozen or more groups of specialists. Self-contained organizations, able to start with a clean sheet of paper and the appropriate research laboratory facilities and go straight on from that point until their airplanes have been built in quantity and are flying for the Army and Navy, remain the ideal to be encouraged.

Recommending that explicit authority should be granted to the Secretary of War and to the Secretary of the Navy to negotiate contracts for quantity purchases of aircraft and other aeronautical material, subject to the requirement that a full report be made to Congress in each case where the authority is used, the Commission states:

"The further we have pursued our inquiry into procurement methods and problems, the more deeply we have been impressed with the almost unique nature of this particular branch of governmental purchasing. Military aircraft and most of their accessories are articles which are under enormously rapid development and which are developed in the military interest alone. It is impossible to be perfectly certain of what an aircraft will do until after it has been built, and the construction of the first example must therefore be undertaken before it can be determined whether or not the machine will actually meet military needs. If the Army and Navy fail to buy a machine so constructed, the chance of finding a market elsewhere is practically nil. In other fields, buying under minimum specification can assure a satisfactory article. Here it becomes almost impossible. There are so many factors which determine the degree of merit for military purposes, and the relations among them are so complicated, that it is almost impossible to draw a rigid specification with assurance that all aircraft meeting it will be fully acceptable. Furthermore, the need for the very highest quality is such that buying to a minimum specification would be undesirable in any case if there should be offered at the same time an article exceeding the specification requirements by ten, twenty, or fifty percent, even though its price might be materially higher than that of the article which just barely got by.

The airplane is essentially a proprietary article in that it represents the experience of a particular organization and that it is in constant development. Each machine that an organization produces ought to lead directly into its next design, and each organization develops certain types of structure and features of design of its own of which it becomes the master.

Regarding all these peculiarities, we find it impossible to accept the normal process of competitive bidding and award to the low bidder as being calculated to give the government the best value for its money. It seems to us essential that there should be administrative discretion to balance quality against price, but always keeping quality to the fore. It seems essential that the Services should be able to make purchases of the best type of aircraft available directly from its originator, who is not only in the best position to build it but who in doing the work will be paving the way for his preparation of another design of improved qualities for the same general function.

The Air Corps Act of 1926 provides that when competitive bids are received for aeronautical material, the award may be made "to the bidder that said Secretary shall find to be the lowest responsible bidder that can satisfactorily perform the work or the service required to the best advantage of the government', and makes the decision of the Secretaries of War and of the Navy upon the selection of the winning bidder final. If that authority were freely and courageously used, and if it were generally understood and accepted that the interests of the Services may very commonly require that awards be made elsewhere than to the low bidder, and if each bidder were required to tender on his own product or on a design turned over for the purpose by the responsible department and upon

which a successful bidder would pay royalty to the originator, and if the fog of legal complication that seems to have settled down on every attempt to buy military aircraft during the past few months could be dispelled, we should see no reason to object to the competitive bidding method except that it introduces some extra months into the already long period of development of a new type of aircraft.

Unfortunately the stipulations of the previous paragraph have not generally been met. The actual award of contracts elsewhere than to a low bidder has been looked at askance as likely to attract public disfavor in the absence of an understanding of all the technical factors involved, although to be sure the present Assistant Secretary of War declares himself quite ready to make the fullest use of his powers under the 1926 Act. With respect to the protection of design right and the use by every bidder of his own designs, the Army has pursued one practice and the Navy another. The whole subject has become involved in a maze of confusion which almost terminated Army aircraft procurement over a period of one full year.

Even further complications are now created by the letter of the Comptroller General of December 12th, which appears to question the legality of the Army's current procedure of requiring the submission of a sample article with a bid and to demand that the Navy practice of letting all bidders compete on a single design which some one of them has developed and which has been accepted as best for the Service shall be the standard. We have already made plain our alarm over the prospective consequences of this ruling, should it be enforced, and its threat to separate the processes of design and production.

While we are hopeful that the present situation may be clarified and that the competitive bidding process may be made workable and brought to a form where it can encourage the development of good aircraft, at the same time we feel that there are occasions on which competitive bidding is bound to be a farce because of the absence of available competition or on which time is so important that the issuance of proposals would not be justified. To meet those cases it seems to us essential that direct negotiation with the manufacturer best able to perform the work (and in some cases as a practical matter there is only one who can perform it adequately) should be authorized.

We recognize the dangers of negotiation, and we recognize that the Congress has very naturally looked askance upon it. We hesitate to propose that negotiative procurement be approved, and we do so only after being convinced that in many cases it is the only method that will work and that will produce a good article in a minimum of time. As a safeguard to be thrown around this extraordinary grant of power, we suggest that in each case where negotiation is used on a contract for a total sum of more than $10,000 a report should be made to the Congress by the head of the department concerned, explaining the reasons for using negotiation and the factors that entered into the determination of the price and the other conditions of the contract. Such a report might well include also the identification of the personnel participating in the negotiation.

We hope that with such an assurance of constant information on what is being done and how and why it may seem possible to approve a method of procurement which we understand to be uniformly in use by the great European powers. Alternative methods of allocating work and of fixing price have been tried from time to time both in Great Britain and in France. Competitive bids are still invited on occasions, but they are the exception rather than the rule. The normal procedure apparently accepted in both countries, and in Italy as well, as necessary to the protection of the interests of the government is the buying of the desired equipment from the man who is in the best position to sell it, and at a price agreed upon and accepted by government representatives as fair. American experience seems to us to confirm that of Europe in indicating that thatmethod of buying is essential in many cases to the securing of a satisfactory result.

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## OFFICERS TO ATTEND AIR CORPS TACTICAL SCHOOL

A total of 50 Air Corps officers will attend the next class at the Air Corps Tactical School at Maxwell Field, Ala. Under Special Orders of the War Department, just issued, these officers are directed to report to the Commandant of this School for duty as students not later than August 29, 1935, viz:

Majors William E. Kepner, Edwin M. Powers*, Kenneth B. Wolfe*, Captains Aaron E. Jones, Alfred J. Lyon, 1st Lieuts. Benjamin W. Chidlaw, Edmund C. Langhead and Alden R. Crawford from Wright Field, Dayton, Ohio.

Major Lewis A. Dayton*, Captains Orvil A. Anderson, Dale V. Gaffney, Edgar L. Sorenson, Carlisle I. Ferris*, Augustine F. Shea*, Kelly Field, Texas.

Major John K. Cannon*, Captain Leon E. Sharon, 1st Lieut. Homer W. Ferguson, Randolph Field.

Major Samuel M. Connell*, Chanute Field, Ill.

Captains Harold L. Clark, Harry A. Halverson, Max F. Schneider, 1st Lieut. Lawrence J. Carr, Office of the Chief of the Air Corps.

Captain John M. Clark, Barksdale Field, La.

Captain Joseph H. Davidson, 1st Lieut. Nathan F. Twining, Fort Crockett, Texas.

Captain Thad V. Foster, Fort Sam Houston, Tex.

Captain Earl S. Hoag, Chapman Field, Fla.

Captains Newton Longfellow, Harold A. McGinnis, 1st Lt. Elwood R. Quesada, Langley Field, Va.

Captain Leland W. Miller, Mitchel Field, N.Y.

1st Lt. James E. Parker, Selfridge Field, Mich.

Captains George V. McPike and Chas. E. Thomas, Army Industrial College, Washington, D.C.

Major Raymond E. O'Neill, Captains Ernest Moon**, Ralph A. Snavely**, and 1st Lieut. Thomas M. Lowe, Maxwell Field, Ala.

Captains Russell L. Maughan, Charles H. Caldwell***, Ford L. Fair***, William D. Old** from the Philippines.

Captain Merrill D. Mann, Instructor, 33rd Division Aviation, Ill. National Guard, Chicago.

Captain Charles A. Horn, Instructor, Arkansas National Guard, Little Rock, Ark.

Captain Eugene B. Bayley, Instructor, 40th Division Aviation, California National Guard, Los Angeles.

Captain Richard H. Magee, Instructor, 28th Division Air Corps, Pennsylvania National Guard, Philadelphia, Pa.

Captain Claude E. Duncan, 1st Lieut. John H. Dulligan, March Field, Calif.

First Lieut. James T. Cumberpatch, Crissy Field, Calif.

Major Cortlandt S. Johnson****, Rockwell Air Depot, Calif.

*Relieved of temporary Rank, Aug. 20, 1935.
** " " " " Sept. 2, 1935.
*** " " " " effective upon date of departure from Philippines.
**** Relieved of temporary rank, July 26, 1935.

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WAR DEPT. ORDERS AFFECTING AIR CORPS OFFICERS

CHANGES OF STATION: To Office, Chief of the Air Corps: Captain James A. Mollison, from Air Corps Training Center, Randolph Field.

To Chapman Field, Miami, Fla.: Captain William V. Andrews, from Bolling Field.

To Boston, Mass.: Captain Walter E. Richards, from Philippines, to duty with Organized Res.

To Bolling Field, D.C.: 1st Lieut. Arthur L. Bump, from Brooks Field, Texas.

To Randolph Field, Texas: 2nd Lieut. George F. Hartman upon completion of tour in Panama; 1st Lieut. Charles A. Harrington from U.S. Military Academy, West Point, N.Y.

To Command and General Staff School, Fort Leavenworth, Kansas, for duty as Instructor: Captain Sam L. Ellis, upon completion of course of instruction at this school; Major Eugene A. Lohman, from March Field.

To Air Corps Tactical School, Maxwell Field, Ala., for duty on Staff and Faculty: 1st Lt. Laurence S. Kuter, upon completion of course of instruction at that School.

To Omaha, Neb.: for duty with Air Corps at Headquarters, 7th Corps Area: Captain Younger A. Pitts, from Fort Leavenworth, Kansas.

RELIEVED FROM DETAIL TO THE AIR CORPS: 2nd Lieut. Gerhard L. Bolland, and to Hawaiian Department for duty with the Infantry.

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Effective March 25, 1935, Captain Fred S. Borum, Air Corps, was assigned to duty as Chief of the Equipment Branch, Engineering Section, Materiel Division, Wright Field, Ohio, with the temporary rank of Major.

First Lieut. James M. Bevans was assigned to duty as Adjutant at the Air Corps Training Center at Randolph Field, Texas, with the temporary rank of Captain.

NO "MYSTERY" IN ROBOT PLANE

Because of many requests from Army and Navy airmen for information regarding the performance of the so-called Robot Mystery plane, the Sperry Company recently issued a statement, with the approval of Mr. Eugene L. Vidal, Director of Air Commerce, outlining certain facts in connection with the big Douglas airliner in which Captains Albert F. Hegenberger and Clayton L. Bissell, Air Corps, have been making flights recently from Oakland, Calif., to test the feasibility and possibilities of accurate aerial navigation employing the Radio compass in conjunction with automatic control of the plane.

It is stated that the plane is equipped with the Kruesi Radio Compass and the Sperry Gyropilot, but they are not interconnected as was implied in some quarters. Of particular interest is the assertion of the Sperry Company that means have been developed by which this may be accomplished. A large number of these radio compasses have been ordered by the U.S. Army, and they are also being seriously considered for numerous transport planes. The Gyropilot is identical with those used on various commercial air transport lines.

In connection with the tests on the Pacific Coast, where up to this writing three long distant flights were completed over the Pacific, the longest being 400 miles out and back again, a total of 800 miles, it is stated that the flying has always been automatic, except for a few minutes after take-off and a few minutes before landing.

The Sperry engineer assigned to the plane reports that the Gyropilot is actually enabling a new technique in aerial navigation to be accomplished; that where formerly it was practically impossible to steer closer than about 2 degrees by magnetic compass, the gyropilot is holding the ship so steady that courses are now being steered by magnetic compass as close as half a degree. By having the airplane under automatic control, the practicability of the radio compass is increased to the nth degree.

The sensitivity of the radio compass is controlled by the volume control on the radio. With the ship under manual control, it is normally necessary to carry a reduced sensitivity setting in order to prevent the compass needle from swinging back and forth across the indicator dial, due to the impossibility of steering a continuously straight course manually. Under automatic control the compass sensiticity can be greatly increased and still have the compass indicator remain steady. The increase in sensitivity permits the compass to show up minute changes of course that otherwise would not be indicated.

It is stated that on completion of the experimental flights on the West Coast, it is contemplated making flights of varying length with this or a similar airplane from the East coast.